

WHAT IS CLAIMED:

5

1. A process for the enzymatic conversion of glucose to gluconic acid comprising providing a solution of glucose; and adding to the solution, in the presence of an oxygen source, from about 25 to about 30 glucose oxidase units of soluble glucose oxidase/gram dissolved solids (ds.) of glucose in the solution and at least 1200 catalase units of soluble catalase/gram dissolved solids (ds.) of glucose in the solution.

10 2. The process of claim 1, further comprising the solution of glucose having from about 25% weight/weight (w/w) ds. of glucose to about 60% (w/w) ds. of glucose.

15 3. The process of claim 1, further comprising the solution of glucose having from about 30% (w/w) ds. of glucose to about 50% (w/w) ds. of glucose.

4. The process of claim 1, wherein about 27 GOU of glucose oxidase/gram ds. of glucose is added to the solution.

20

5. The process of claim 1, wherein at least about 1279 CU of catalase/gram ds. of glucose is added to the solution.

25 6. The process of claim 1, wherein at least about 1559 CU of catalase/gram ds. of glucose is added to the solution.

7. The process of claim 1, wherein at least about 1999 CU of catalase/gram ds. of glucose is added to the solution.

30 8. The process of claim 1, wherein the glucose oxidase and the catalase are added to the solution of glucose in two equal doses, the first dose being added at the start of the reaction and the second dose being added halfway through the total intended time of the reaction.

35 9. The process of claim 1, wherein the catalase is naturally produced by a strain of the species *Aspergillus niger*.

10. The process of claim 1, wherein the solution of glucose is maintained at a pH of from about 5 to about 7.

11. The process of claim 10, wherein the solution of glucose is maintained at a
5 pH of about 6.

12. The process of claim 1, wherein the temperature of the solution of glucose is maintained at from about 25°C to about 40°C.

10 13. The process of claim 12, wherein the temperature of the solution of glucose is maintained at from about 30°C to about 35°C.

14. The process of claim 1, wherein the pressure of the solution of glucose is maintained at about 1 bar.

15 15. The process of claim 1, further including maintaining an air flow through the solution during the reaction of about 1 volume gas per volume of reaction medium per minute (vvm).

20 16. A process for the enzymatic conversion of glucose to gluconic acid comprising providing a solution of glucose having about 25% of weight/weight dissolved solids glucose to about 60% weight/weight dissolved solids glucose; and adding to the solution, in the presence of an oxygen source, from about 25 to about 30 glucose oxidase units of soluble glucose oxidase/gram dissolved solids glucose in the solution and from
25 about 1279 to about 1999 catalase units of soluble catalase/gram dissolved solids of glucose in the solution while maintaining the solution of glucose at a pH of from about 5 to about 7, a temperature of from about 25°C to about 40°C, a pressure of about 1 bar and maintaining an air flow of about 1 volume gas per volume of reaction medium per minute through the solution.

30 17. A spray-granulated gluconic acid granulate produced by the process of claim
16.

18. The process of claim 1, wherein the catalase is naturally produced by a
35 microbial or mammalian source.

19. The process of claim 1, wherein the catalase is naturally produced by a microbial source.

20. The process of claim 1, wherein the catalase is naturally produced by a strain 5 of *Micrococcus lysodeikticus*.

21. The process for the production of a low-dust spray-granulated gluconic acid, comprising the steps of:

- (a) obtaining a gluconic acid-containing solution wherein said solution is produced by the enzymatic conversion of glucose to gluconic acid, said conversion comprising providing a solution of glucose and adding to the solution from about 25 to about 30 glucose oxidase units of soluble glucose oxidase/gram dissolved solids of glucose in the solution and at least 1200 catalase units of soluble catalase/gram dissolved solids of glucose in the solution;
- (b) obtaining gluconic acid crystals from the solution; and
- (c) spray-coating the gluconic acid crystals with liquid sodium gluconate in a spray-dryer, whereby a spray-granulated gluconic acid is obtained.

22. The process of claim 21, wherein the gluconic acid crystals are obtained from the gluconic acid-containing solution broth by concentrating and filtering the gluconic acid-containing solution.

25 23. The process of claim 21, wherein the catalase is naturally produced by a strain of *Micrococcus lysodeikticus*.

30

35